



We Begin to Look at the Microcosm, the Early Universe, and the Dark Universe

An interview with
Rolf-Dieter Heuer,
Director-General of CERN
– European Organization
for Nuclear Research



Photo: Andrew Kobos

Andrew Michael Kobos [AMK] – *Dr Heuer, how do you feel about being the director of CERN at the time it starts the regular use of the Large Hadron Collider (LHC) – the largest, most complicated, yet most promising research facility on this planet? Pride? Challenge? Burden?*

Rolf-Dieter Heuer [RDH] – I think, you characterize it very well. It is a challenge, a burden, and a pleasure. For me as a scientist, the pleasure is the largest part of it. Firstly, it is really a pleasure to see this machine coming up, and secondly it is the pleasure of seeing all these people working together, those not only from CERN and at CERN but also from other countries and other laboratories. It is certainly also some sort of burden to get everything running because the future of particle physics depends on the success of this machine.

AMK – *Frank Wilczek envisaged – I quote – “a new golden age in understanding the laws of Nature with the LHC”.*

RDH – With this machine of the highest collision energy ever – to my mind – we’ll change the view of the Universe. We are entering a very exciting phase of particle physics, astrophysics, and cosmology.

It is important to point out that the LHC not only hopefully opens new frontiers for basic research but it has also opened new frontiers for technology. For example, when the idea of the Large Hadron Collider came up 25 years ago there was no magnet technology existing which could serve this accelerator, i.e. no superconducting magnets of the type, which could give sufficient field to reach such energy of protons. The basic research drives innovations in technology and also in information technology.

AMK – *One is unable to predict what innovations will be driven by the LHC in several years...*

RDH – That’s right. In this case, it always takes the foresight, imagination and vision of people who have specific needs in their research. At the LEP the basic research drove the World Wide Web. At the LHC it has already driven the [computer] Grid. These two innovations have been driving education and training.

AMK – *Are you confident beyond any reasonable doubts that a malfunction of a scale of the accident on September 19, 2008, will not reoccur at the LHC?*

RDH – I am confident. We’ve done all the things, introduced all the measures, we could. We have installed a lot of newly built equipment to make the machine better than before. The point is this: whenever you make a new project, usually the new technology is not so much failing. It is the old technology that fails because people think they know how to execute it.

AMK – *The LHC has been brought back to operation incredibly quickly. After the two space shuttle disasters, each time it took something like three years to get the space shuttle flying again. The Tevatron at FermiLab was being adjusted for several years. The job done within 14 months at the LHC is formidable, fantastic.*

RDH – Oh, yes. On Nov. 20, 2009, we restarted the LHC. Within four days we got it running very well.

The job, if we would not have changed anything, would still be quite faster. But we’ve changed a number of things because we wanted to avoid a problem like the one in 2008 in the future. For some people it was long but if one sees how much work was done, how many new things had to be done – then one can appreciate that indeed the job was done in a short time. Among other things, like replacing the magnets, connectors, cables, etc., one was kind of a miracle to me: over four kilometers of vacuum tube were cleaned so quickly.

AMK – *In the opinion of the many, you have personally “injected” a new optimism among the LHC staff.*

RDH – You see, the things had worked so well at the beginning. Then the accident happened. People are pulled down to a big depression when something like that happens. The first job was to bring people up and bring back the optimism. I’m a born optimist. I think I was able to transfer my optimism.

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